

MASS - the amount of particles in an object.

MASS of an object is constant.

measured in

POUNDS OR OZ

1. US measure

Metric

2. metric

g oz kg

$$\frac{1000 \text{ g}}{1 \text{ kg}}$$

Symbol for mass "m"

MASS IS NOT the same  
as weight

MASS is a 3. Scalar

Weight is 4. Vector

AND ALL FORCES DO HAVE a direction  
AND therefore are Vectors

Weight's direction is Always 5. ↓

FORCE is 6. push or pull on an  
Object.

CONTACT FORCES  
Two things need to touch each other

NON-CONTACT FORCES  
These forces do not touch each other.

7. magnetic

8. gravitational

gravity is NOT A FORCE

$$W = mg$$

Diagram illustrating the components of the weight formula  $W = mg$ :

- $W$  is labeled as weight.
- $m$  is labeled as mass.
- $g$  is labeled as acceleration due to gravity.

$$9. \text{ N} = 10 \text{ Kg} \quad 11. \text{ m/s}^2$$

=

What are the units



3kg of AMAZING chicken  
Weight of AMAZING chicken on  
MARS?  $g_{\text{MARS}} = 3.8 \text{ m/s}^2$

$$\begin{aligned} m &= 3 \text{ kg} & W &= mg \\ g &= 3.8 \text{ m/s}^2 & W &= (3 \text{ kg})(3.8 \text{ m/s}^2) \\ W &= ? & W &= 11.4 \text{ N} \downarrow \end{aligned}$$

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What is the amazing chicken's  
Weight on earth?  $g_{\text{earth}} = \underline{9.8 \text{ m/s}^2}$

data

$$\left[ \begin{array}{l} m = 3 \text{ kg} \\ g_{\text{earth}} = 9.8 \text{ m/s}^2 \\ \text{Weight on earth} = ? \end{array} \right.$$

eq

$$W = mg$$

Sub =

$$W = (3 \text{ kg})(9.8 \text{ m/s}^2)$$
$$W = 29.4 \text{ N} \downarrow$$

PLANET ZUPRA  
Weight of 147.5 N  
What is the gravity on the plane

$$m = 3 \text{ kg}$$
$$W = 147.5 \text{ N}$$
$$g = ?$$

$$W = mg$$

$$49.16 \text{ m/s}^2$$

gravities FOR Planets  
SUN  $274.1 \text{ m/s}^2$

mercury  $3.6 \text{ m/s}^2$

Venus  $8.9 \text{ m/s}^2$

earth  $9.8 \text{ m/s}^2$

MARS  $3.8 \text{ m/s}^2$

MOON (OUR)  $1.6 \text{ m/s}^2$

JUPITER  $26.0 \text{ m/s}^2$

Saturn  $11.1 \text{ m/s}^2$

URANUS  $10.7 \text{ m/s}^2$

Neptune  $14.1 \text{ m/s}^2$